U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH ADMINISTRATION
BUREAU OF AGRICULTURAL AND INDUSTRIAL CHEMISTRY

GENERAL STATEMENT

During the past year the work of the Bureau of Agricultural and Industrial Chemistry in the application of chemical, physical, biological and engineering science and technology has resulted in the development of new and improved food, feed and industrial uses of agricultural commodities. Examples of these are as follows:

Some accomplishments mentioned previously which are now in commercial use.

The use of casein fibers for paint brushes. A plant for commercial production has been erected by a large paint brush manufacturer.

A further extension of the use of agricultural residues for the soft-grit blasting and cleaning of machine parts, foundry cores and molds, and for paint removal.

Rutin--A new medicinal now being produced from buckwheat plants by a number of manufacturers, including two prominent commercial drug houses.

Apple essence and full flavored apple juice are now being commercially produced by twelve companies.

Frozen orange juice concentrate is now being manufactured by two companies.

The froth-flotation process for the cleaning of peas for canning or freezing has been adopted and is in extensive use in the Pacific Northwest.

The largest sugar mill in Louisiana is now producing aconitic acid and aconitates from "B-molasses" on a commercial scale.

More Recent Accomplishments

The rot-proofing of cotton cloth by the application of a simple and permanent chemical treatment.

The development and semi-commercial installation of a continuous process for the distillation of pine gum.

Discovery of an entirely new solvent extraction procedure for cottonseed which permits the separation of the oil, pigment glands and pigment free meal; yielding a higher quality oil and improved meal and potential by-products.

The utilization of a byproduct of penicillin manufacture as a poultry feed adjunct.

The development and commercial pilot plant operation of a continuous alcohol extraction process yielding soybean oil and a high-grade soybean flour.

The tracing of the action of plant hormones by the use of new radio-active elements to aid in the chemical synthesis of improved plant growth regulating substances.

A process for producing a stronger and cheaper corrugating board from straw.

Reduction in the cost of production of industrial alcohol from grain by the substitution for malt of a new starch splitting enzyme.

Improvement in the production of starch and starch products from moldy and heat-damaged corn unfit for feeding purposes.

The production of Sarelon, a promising textile fiber from peanut protein.

Important contributions to an improved technique of egg drying resulting in the extension of storage life of the dried egg powder.

The pilot plant production of feed yeast from fruit and vegetable wastes.

The extension of the shelf-life of soybean oil, thereby increasing its potential consumption for food uses.

"Dehydro-freezing"—A new method for preserving fruits and vegetables.

Through cooperative studies the determination of the influence of heredity on the chemical composition—starch, protein and oil—of hybrid corn as a guide to the breeding of corn best suited to specific food and industrial uses.

A process for the home-stabilization of farm-produced lard.

Crystalline beta-amylase—a basic discovery of great significance to the industrial alcohol and other fermentation industries using starchy crops as raw material.

Determination of factors contributing to undesirable flavors in certain grapefruit juices and development of methods of correction.

Inauguration of large-scale cooperative tests of an improved method of storing sugar beets.

The discovery of the feed value of hybrid corn tassels—now an agricultural waste.

DISSEMINATION OF RESEARCH RESULTS

Dissemination of research results of the Bureau was also accomplished by the issuance during the fiscal year 1946 of 297 publications. A list of these publications, and patents granted to the Bureau during the fiscal year 1946, is available in mimeographed form for use by the public and for the information of the Committee.

Further dissemination was brought about by personal contact with interested individuals and groups through the visits of a total of 12,186 persons to the Bureau's laboratories and field stations during the fiscal year 1946. Approximately 4,000 of these visitors were concerned with specific problems related to the work on which the particular laboratory or field station is engaged.

In addition, the Bureau maintained close contact with industrial and agricultural organizations.

PATENTS

During the calendar year 1946, 93 applications for patents were filed in the Patent Office as a result of the Bureau's research. At the end of the calendar year 1946, 282 applications for patents remained pending in the Patent Office.

During the calendar year 1946, 34 patents were granted to the Bureau. A list of these follows:

LIST OF PATENTS GRANTED FROM JANUARY 1, 1946 TO DECEMBER 31, 1946

TITLE	PATENT NO.	DATE OF ISSUE
Process for Prevention of Gelation of Solutions or Dispersions of Prolamines	2,392,084	Jan. 1, 1946
Adjunct for Tobacco	2,392,514	" 8, 1946
Insecticides	2,392,961	" 15, 1946
Process for Recovering Rubber from Fleshy Plants	2,393,035	" 15, 1946
Process for Purification of Carotene	2,394,278	Feb. 5, 1946
Process for Refining Crude Oleoresin	2,395,190	" 19, 1946
Insecticides	2,396,019	Mar. 5, 1946
Acrylic Esters of Glycol Mono-Ethers	2,396,434	" 12, 1946

TITLE	PATENT NO.	DATE OF ISSUE
Condensation Products of Hydroxy Carboxylic Acids	2,396,994	Mar. 19, 1946
Treatment of Rubber	2,399,156	Apr. 23, 1946
Process for Producing Glues and Adhesives from Keratin Protein Materials	2,399,161	Apr. 30, 1946
Process for Preparing Starch Acetate	2,399,455	" 30, 1946
Process for Manufacturing Acyloxy Carboxylic Acids	2,399,595	" 30, 1946
Combination Sunlight or Artificial Heat Dehydrator and Hotbed	2,399,696	May 7, 1946
Method for the Isolation of Penicillin from Aqueous Solutions.	2,399,840	" 7, 1946
Process for Esterifying Acyloxy Carboxylic Acids	2,402,129	June 18, 1946
Process for the Production of Di-Esters of Hydroxy Carboxylic Acids	2,402,130	" 18, 1946
Device for Peeling Agricultural Products	2,403,923	July 16, 1946
Method of Making Cotton Fabrics with Differential Elastic Properties	2,404,837	" 30, 1946
Stabilization of Nitrocellulose	2,404,887	" 30, 1946
Process of Manufacturing Volatile Esters of Hydroxy Carboxylic Acids	2,405,646	Aug. 13, 1946
Process of Recovering Peanut Protein	2,405,830	" 13, 1946
Preparation of Starch Ethers	2,405,973	" 20, 1946
Preparation of Organic Solvent-Soluble Unsaturated Carbohydrate Ethers and Products Produced Thereby	2,406,369	" 27, 1946
Process of Dehydrating Meats Containing Fats in a Fluid Current	2,406,395	" 27, 1946
Azeotropic Distillation of Methanol from Admixture with Acrylic Esters	2,406,561	" 27, 1946
Improved Process for the Manufacture of Methyl Acrylate by the Thermal Decomposition of Methyl Alpha-Acetoxypropionate	2,408,177	Sep. 24, 1946
Derivatives of Isoascorbic Acid	2,408,182	" 24, 1946
Guayule Rubber by Fermentation	2,408,853	Oct. 8, 1946
Derivatives of Isoascorbic Acid	2,408,897	" 8, 1946
Allyl and Methallyl Esters of Lactic and Alpha-Acetoxypropionic Acids	2,410,551	Nov. 5, 1946
9,10-Epoxyoctadecanol and Process for its Preparation	2,411,762	" 26, 1946
Process for Refining Oleoresin	2,411,925	Dec. 3, 1946
Method for Preparing Soluble Allyl Starch	2,413,463	" 31, 1946

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DIGEST OF GENERAL STATEMENT

The general statement reports many of the accomplishments of the Bureau during the past year, including several accomplishments which during the past year have been adapted to commercial production.

The general statement also carries information with regard to the dissemination of the results of the Bureau's research, indicating the number of publications that have been issued as well as the number of visitors to the Bureau's laboratories. There is also included in the general statement information as to the number of patents applied for as the result of work of the Bureau as well as a statement of the patents that have been granted during the calendar year 1946.